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AUTHOR Russ-Eft, Darlene
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ABSTRACT

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Measuring Educational Expectancies

Darlene Russ-Eft

American Institutes for Research
Box 1113
Palo Alto, California 94302

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Measuring Educational Expectancies

Darlene Russ-Eft
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The demographic accounting approach was applied to educational data to trace the movement of individuals among educational states such as different grade levels. Procedures were developed to match individual records on successive years of the Current Population Survey (CPS). Transition rates from one grade to the next were calculated for male and female cohorts ranging in age from 3 to 24. These transition rates were successively multipled to provide an expectancy for (1) highest grade completed, (2) the probability of high school completion, and (3) the probability of college completion. Policy issues were addressed concerning the educational opportunities of males versus females who were above, below, or at the modal grade level for their age group and who were either enrolled or not enrolled in school.

Introduction

Concern for the equitable distribution of educational opportunities has inspired numerous studies and reports on the status of women and blacks relative to white males (e.g., Duncan, 1968; Chadima & Wabnick, 1977; Tipps & Zimbler, 1978; and Gilmartin, 1980). Numbered among these research efforts are studies that have used major longitudinal data bases to examine the paths followed and the time spent in pursuit of education by various population subgroups (e.g. Wise, McLaughlin, & Gilmartin, 1977; Peng, 1977; and Abeles, Steel, & Wise, 1978). Nevertheless, a suggestion was made by Robert Johnston (at the National Research Council Committee on National Statistics conference on indicators of educational equity) to develop educational expectancy measures.

The present paper was an attempt to follow Johnston's suggestion. It employs a simplified demographic accounting scheme, as described by Robert Stone (1971) and Marilyn McMillen and Kenneth Land (1979) to examine issues related to enrollment status and rates of transition among educational states.

The demographic approach to social accounting estimates the stocks and flows of the human population in various sectors (e.g., education, health, housing, and marriage and family). The application is similar to a system of national economic accounts, which integrates information on economic and financial stocks and flows. In the case of demographic accounting, the purpose is to describe the pattern of society and the ways in which this pattern changes over time. Furthermore, it provides a comprehensive and consistent basis for policy planning.

The demographic accounting approach uses data from successive years to trace the movement of individuals among states within a sector. The results provide information on the approximate rates of transition into and out of each state. If we consider states in terms of grade levels in schools, then the demographic accounting scheme can be used to estimate the probabilities of students remaining in the same grade (if enrolled), advancing one or more grades ahead, or falling one or more grades behind. In more sophisticated applications of this approach to education, the transition rates among particular educational states can be derived (e.g., the probability of students leaving regular grade school programs to enroll in special education classes). Furthermore, data from different

sectors can eventually be linked to provide a more comprehensive view (e.g., the effects on movements within the educational system of students entering the work force or not being enrolled in school for one or more years in their educational careers can be estimated).

Work that has been done to date to develop demographic accounting systems has been limited for the most part to the estimation of single-stage transition probabilities (i.e., probabilities computed for pairs of adjacent years only) due to the paucity of the data that are available. The present study has also been limited to the estimation of single-stage transition probabilities; specifically, to estimating enrollment and transition rates among educational grades for the two pairs of years 1974-75 and 1977-78. The data for analysis were supplied by the October Current Population Survey for these years.

The estimated transition rates for each pair of years were used to examine the probabilities of (1) the highest grade completed, (2) high school completion, and (3) college completion, for males and females aged 3-24 years who were above, below, or at the modal grade level for their age group and who were either enrolled or not enrolled in school. Limitations of the data prevented these analyses from being disaggregated further (e.g., to other population subgroups). Nevertheless, policy issues and questions were addressed concerning the educational opportunities of males versus females in the three areas of analysis, and comparisons were made of the opportunities of these groups for each pair of years.

The Current Population Survey (CPS) conducted by the Census Bureau overcomes the problem of the limited time period which occurs when using longitudinal data bases. The CPS is conducted each month and includes a national sample of approximately 47,000 households. The sample is drawn from over 461 areas comprising 923 counties and independent cities, and it covers the fifty states and the District of Columbia. Thus, with appropriate weighting procedures, it is possible to obtain estimates for the United States population. In addition, it is possible to match records across files, because the rotation scheme for sampling provides longitudinal information on those households that have the same residents.*

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* Since the scrambling algorithm for the household ID number has been changed several times, it is possible to match files only within the following groups.
1. January 1968 through November 1971
2. December 1971 through December 1972
3. January 1973 through December 1976
4. January 1977 to the present

We decided to use the CPS data for several reasons. The longitudinal component in the sample permitted us to derive and compare transition probabilities for two pairs of adjacent years and to estimate educational expectancies by successively multiplying these probabilities for each pair of years. Because of the size of the CPS sample, the survey provided information on the full range of ages and educational levels, enabling an examination of each kind of transition. Finally, the CPS is a national data base that has been developed and maintained for 30 years and that continues to be updated. Thus, our work could be replicated with CPS data from other years to determine whether any significant changes have taken place in terms of educational expectancies.

Procedures for Creating Longitudinal Record Using the CPS

As mentioned above, the CPS contains a longitudinal component, since certain households remain in the sample. However, even though the household remains in the sample, the persons within the household may change from one year to the next. Therefore, creating longitudinal records requires more than just matching household identifiers from one survey year to the next. The procedures for matching cases from two successive years of the CPS followed three basic steps: (1) matching individuals by household identifier, age, and sex; (2) testing these indivdual matches by comparing the sex and age of all others in the household for the two years; and (3) deleting potential individual matches that were probably spurious. These procedures are described in greater detail below.

Matching individual records. Individual records were initially linked using the household identification number assigned by the Bureau of the Census. A record was considered to be a match if, for the two years, the same sex was listed and the age variable showed no change or an increase of one or two years. (Since respondents to the CPS survey may not be contacted at exactly the same time each October, persons with October birthdays may show no increase in age or an increase of two from one year to the next, depending on the survey schedule for each year.)

Checking household data. At this point, records for all other persons with the same household identification number (e.g., family members) were examined. This step aimed to assess whether the family in the household was the same for both years. If the family was considered a match for both years, then the individual records in the analysis file with the same

household identification number and matched by sex and age variables for the pair of years were considered to be truly matched. If three or more persons in a houshold matched according to household identification number, sex, and age, then the household was considered a match. Otherwise, if two or more persons aged 14 years or older in the household did not match, then the household was considered to be a nonmatch and all records for that household were deleted from the analysis. All other households with at least one person matched were considered a match. These criteria were arrived at as a compromise between allowing for normal family changes while rejecting cases that would be highly unusual for a family.

Deleting spurious matches. Three kinds of cases were considered likely spurious matches and were deleted from the file: (1) individuals whose race was not the same in both years, (2) individuals whose age remained the same and highest grade completed remained the same or decreased, and (3) individuals whose age increased by two years and highest grade completed increased by two or more years.

Procedures for Computing Highest Grade Completed

The CPS records permitted us to define educational level in two ways: grade currently attending and highest grade completed. We decided to use the latter definition, for it provided a more definite educational state, and it permitted us to specify an educational state for persons who were not currently attending school. This decision left us with the tasks of specifying the procedures for determining the variable of highest grade completed.

Differences in the CPS records for adults (ages 14 and older) and for children (ages 3 to 13) necessitated some differences in computation of highest grade completed. The adult records contain an indication of highest grade attended (from grade 1 to college 6+) and of whether the grade was completed. If the highest grade attended had not been completed, one grade level was subtracted from the highest grade attended to obtain the highest grade completed. For example, if a person had attended the 11th grade but was not reported as having completed it, the highest grade completed was designated as 10th grade. Essentially, the same procedure was employed for the children's records. However, for children attending nursery school (either full-day or part-day), the highest grade completed was designated as "none." For children attending kindergarten

(either full-day or part-day), the highest grade completed was designated as nursery school. These procedures may have introduced biases in the records for the young children; therefore, caution must be exercised in examining the results from the preschool group.

Procedures for Deriving Transition Probability and Expectancy Measures

As a first step, we identified the kind of transition that the person experienced from one year to the next. Transitions were defined for grade level and for enrollment status. Each individual on the matched file was classified into one of 42 states in each year: 21 levels of highest grade completed, by enrolled/not enrolled. For any individual, only six transitions were considered "allowable," and individuals with other transitions were deleted from analysis. The six allowable transitions were (1 and 2) no change in highest grade completed and either change or no change of enrollment status, (3 and 4) an increase of one grade in highest grade completed (normal progress in school) and either change or no change in enrollment status, and (5 and 6) an increase of two grades in highest grade completed and either change or no change of enrollment status. The resulting 42 x 42 transition matrix was calculated separately for each sex, for each race (white, black, other), and for each age (from 3 to 24), resulting in a total of 132 matrices. The matrices for "other" races were too sparse to permit stable estimation, so analyses were limited to whites and blacks. The matrix of one-year transitions from age a to a + 1 for race r and sex s is denoted $M_{rs}(a)$. Table 1 presents the $M_{rs}(a)$ matrix of transition probabilities for 15-year-old white females. As described above, all cases that had missing data for highest grade completed or that had changed to a grade level other than 0, 1, or 2 grades higher were deleted from further calculations.

The next step involved the calculation of n-year matrices of transition probabilities from age (a) to age (b), where for most analyses, b equaled 25. A matrix $MM_{rs}(a,b)$ was calculated for each age such that $MM_{rs}(a,b) = M_{rs}(a) \times M_{rs}(a+1) \times \ldots \times M_{rs}(b-1)$, where the multiplication is standard matrix multiplication.

The final step in calculating expected states at age b involved the multiplication of a vector $V_{rs}(a)$ times the matrix $MM_{rs}(a,b)$. The row vector $V_{rs}(a)$ consisted of the vector of proportions of the population at age a who are in the various highest-grade-completed by enrollment

TABLE 1

Educational Transition Probabilities for
White Females Aged 15 in 1977

1977 Highest Grade Completed	1977 Enroll Status	Same Grade		Advanced 1 Grade		Advanced 2 Grades		Other		Missing		Row Total
		Enr 1978	Not Enr 1978	Enr 1978	Not Enr 1978	Enr 1978	Not Enr 1978	Enr 1978	Not Enr 1978	Enr 1978	Not Enr 1978	
Missing	Enr	0.0	0.0	0.0	0.0	0.0	0.0	83.5	16.5	0.0	0.0	9,105
	Not Enr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
6th Grade	Enr	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,432
	Not Enr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
7th Grade	Enr	0.0	0.0	62.0	0.0	18.7	0.0	19.3	0.0	0.0	0.0	7,731
	Not Enr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
8th Grade	Enr	6.3	2.1	80.5	0.6	6.7	0.0	1.6	2.2	0.0	0.0	89,100
	Not Enr	0.0	86.7	0.0	13.3	0.0	0.0	0.0	0.0	0.0	0.0	1,995
9th Grade	Enr	7.4	0.9	89.1	0.0	0.9	0.0	1.7	0.0	0.0	0.0	444,515
	Not Enr	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,484
10th Grade	Enr	13.8	0.0	76.8	0.0	2.0	2.5	4.9	0.0	0.0	0.0	39,872
	Not Enr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
11th Grade	Enr	11.7	0.0	21.3	0.0	0.0	0.0	67.0	0.0	0.0	0.0	4,743
	Not Enr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
12th Grade	Enr	39.0	0.0	0.0	0.0	0.0	0.0	61.0	0.0	0.0	0.0	2,531
	Not Enr	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	1,603

status. For calculating the average of educational expectancy values, we made the simplifying assumption that highest grade completed is an equal interval variable. Thus, the mean educational expectancy by age b for an individual presently at age a is $W_{rs}(a,b) \times N$, where $W_{rs}(a,b) = V_{rs}(a) \times MM_{rs}(a,b)$ and N is a column vector whose elements are the possible levels of highest grade completed (i.e., $N_i = i$). For computing the probability of high school completion, for example, N is a vector of 14 zeroes followed by 7 ones; for computing the probability of college completion, N is a vector of 18 zeroes followed by 3 ones.

Results

In this section, we present our results from analyses conducted in three areas: (1) educational expectancies, (2) the probability of completing high school, and (3) the probability of completing college.

Educational Expectancies

One indicator of educational equity exists in the projection of educational achievement (as measured in terms of the expectancy for highest grade completed). Systematic differences in the expected achievement for certain groups of students may indicate the presence of barriers that limit the students' participation in the educational process.

Table 2 presents the expectancies for highest grade completed by age 25 for white males and white females for the years 1974-75 and for the years 1977-78. In the parentheses is the variance estimate associated with each mean expectancy. These results indicate that a white male who was three years old in 1974 could expect that the mean highest grade completed by the time he was 25 years old would be 13.70 (or more than one year of college). The expectancies for the white males and females are very similar. There is some indication that the grade expectancy for the women falls below that of the men among the older age groups.

Table 2

Expectation for Highest Grade Completed by Age 25

Current Age (in 1974 or 1977)	Mean Highest Grade Completed by Age 25							
	Years 1974-75				Years 1977-78			
	White Males		White Females		White Males		White Females	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
6	13.70	(2.30)	13.90	(2.07)	13.49	(2.30)	13.52	(2.09)
9	13.67	(2.31)	13.88	(2.08)	13.48	(2.30)	13.54	(2.05)
12	13.66	(2.31)	13.80	(2.12)	13.37	(2.28)	13.55	(2.07)
15	13.67	(2.30)	13.91	(2.06)	13.52	(2.19)	13.58	(1.99)
18	13.75	(2.35)	13.87	(2.11)	13.78	(2.29)	13.63	(2.16)
21	13.74	(2.93)	13.03	(2.34)	13.34	(2.58)	12.97	(2.65)
24	13.09	(2.50)	12.69	(2.13)	12.83	(2.11)	12.51	(2.58)

Table 3 presents the educational expectancies for persons who were at the modal grade for their age group, one grade below the modal grade, or one grade above the modal grade. Thus, in 1975, white females aged 15 who were one grade below modal grade could expect to complete 12.94 grades while their age peers who were at modal grade could expect to complete 14.01 grades. Table 4 provides these same expectancies averaged over several age groups. As can be seen from the two tables, the differences in expectancies among the grade levels are greater than those between the males and females. Thus, those students who are below the modal grade for their age group will probably receive less education than their peers who are at or above the modal grade.

Table 3

Expectation for Highest Grade Completed by Age 25
(for persons below, at, or above modal grade)

Current Age (in 1974 or 1977)	Mean Highest Grade Completed by Age 25											
	Years 1974-75						Years 1977-78					
	White Males			White Females			White Males			White Females		
	1 Grade Below Modal	At Modal Grade	1 Grade Above Modal	1 Grade Below Modal	At Modal Grade	1 Grade Above Modal	1 Grade Below Modal	At Modal Grade	1 Grade Above Modal	1 Grade Below Modal	At Modal Grade	1 Grade Above Modal
6	13.32	13.69	13.94	13.68	13.87	14.20	12.99	13.48	13.84	12.00	13.34	13.77
9	13.16	13.73	14.11	13.56	13.87	14.32	12.86	13.61	14.07	13.13	13.60	13.85
12	12.93	13.79	14.22	12.98	13.88	14.42	12.54	13.73	14.29	13.02	13.65	13.93
15	12.86	14.08	14.43	12.94	14.01	14.62	12.48	13.95	14.72	12.68	13.72	14.03
18	13.05	14.35	15.90	12.93	14.21	15.97	12.79	14.27	16.35	12.84	13.92	15.42
21	11.86	12.40	14.31	11.58	12.25	13.70	11.50	12.32	14.16	11.60	12.33	13.58
24	11.30	12.10	13.16	11.13	12.05	13.13	11.23	12.09	13.13	11.14	12.09	13.04

Table 4

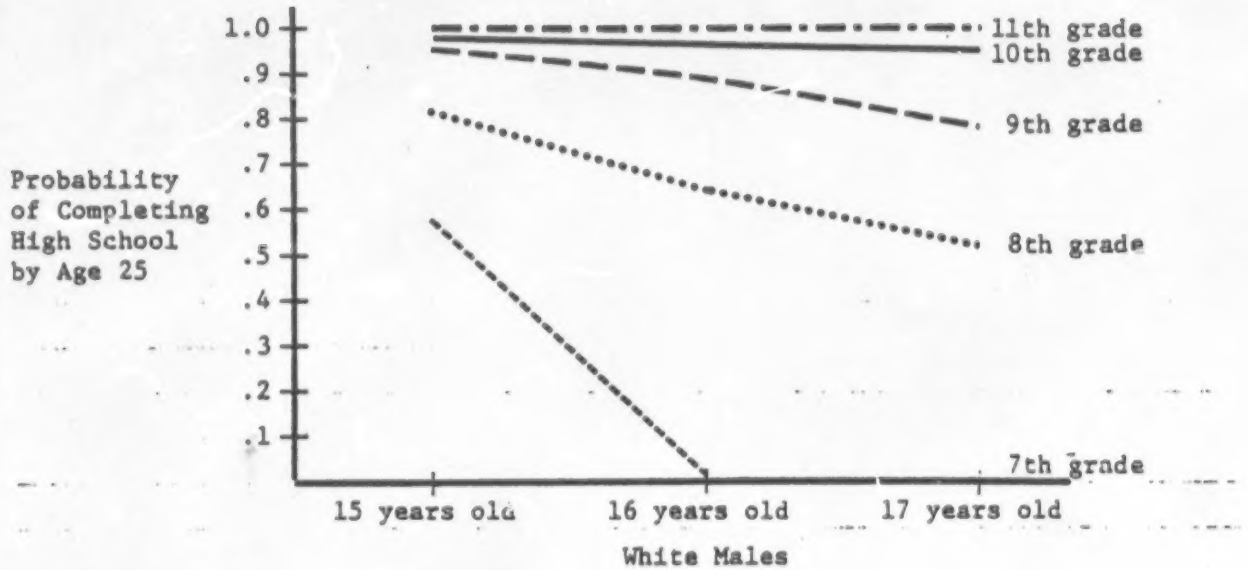
Expectations for Highest Grade Completed by Age 25
(for persons below, at or above modal grade)

Current Age (in 1974 or 1977)	Mean Highest Grade Completed by Age 25 — Years 1974-75 — White Males: 1 Grade Below Modal	At Modal Grade	1 Grade Above Modal	White Females: 1 Grade Below Modal	At Modal Grade	1 Grade Above Modal	Years 1977-78 — White Males: 1 Grade Below Modal	At Modal Grade	1 Grade Above Modal	White Females: 1 Grade Below Modal	At Modal Grade	1 Grade Above Modal
9 - 11	13.19	13.74	14.07	13.50	13.87	14.03	12.86	13.59	14.04	13.07	13.39	13.84
12 - 14	12.55	13.87	14.27	12.82	13.90	14.16	12.43	13.79	14.43	12.82	13.67	13.94
15 - 17	12.82	14.17	14.31	12.43	14.12	14.63	12.60	14.08	14.78	12.69	13.80	14.08
18 - 21	12.19	13.08	13.14	12.19	12.94	13.02	12.00	12.96	13.24	12.29	12.87	14.73
	Standard Deviation for Mean Highest Grade Completed by Age 25											
9 - 11	2.43	2.28	2.16	2.18	2.06	2.01	2.39	2.23	2.24	2.40	2.00	1.96
12 - 14	2.41	2.13	2.06	2.23	2.03	1.97	2.31	2.14	2.20	2.06	1.94	1.93
15 - 17	2.12	2.03	2.13	1.83	1.94	1.94	1.83	2.02	2.15	1.79	1.90	1.92
18 - 21	1.29	1.41	1.39	1.30	1.31	1.14	1.06	1.35	1.28	1.08	1.29	1.23

High School Completion

With greater importance being placed upon the need for a high school diploma, retention rates in high school have generally increased during this century. At the same time, the problems of the high school dropout have raised increasing concern. Young people who fail to complete high school face a bleak future. Success in the world of work depends upon success in the educational system; and the labor market opportunities of dropouts are poor. Borus, Crowley, Rumberger, Santos, and Shapiro, (1980) recently reported that the unemployment rate for dropouts aged 18 to 22 years is almost three times as high as the rate for high school graduates in the same age range. It is important, therefore, to monitor the indicators of high school completion and, at a later stage, factors relating to changes in these indicators. For this reason, we examined the patterns of high school completion for males and females in 1974-75 and 1977-78, and we compared these patterns to determine whether the rates of high school completion for the two groups differed systematically.

Figure 1 presents the probabilities of completing high school by age 25 for white males and females aged 15, 16, and 17 years in 1974. Figure 2 displays these same data for those aged 15, 16, and 17 in 1977. Among white male 15-year olds whose highest grade completed in 1974 is the ninth grade, the probability of completing high school by age 25 is quite high (.966), but this probability decreases to .872 for 16-year olds and to .790 for 17-year olds.



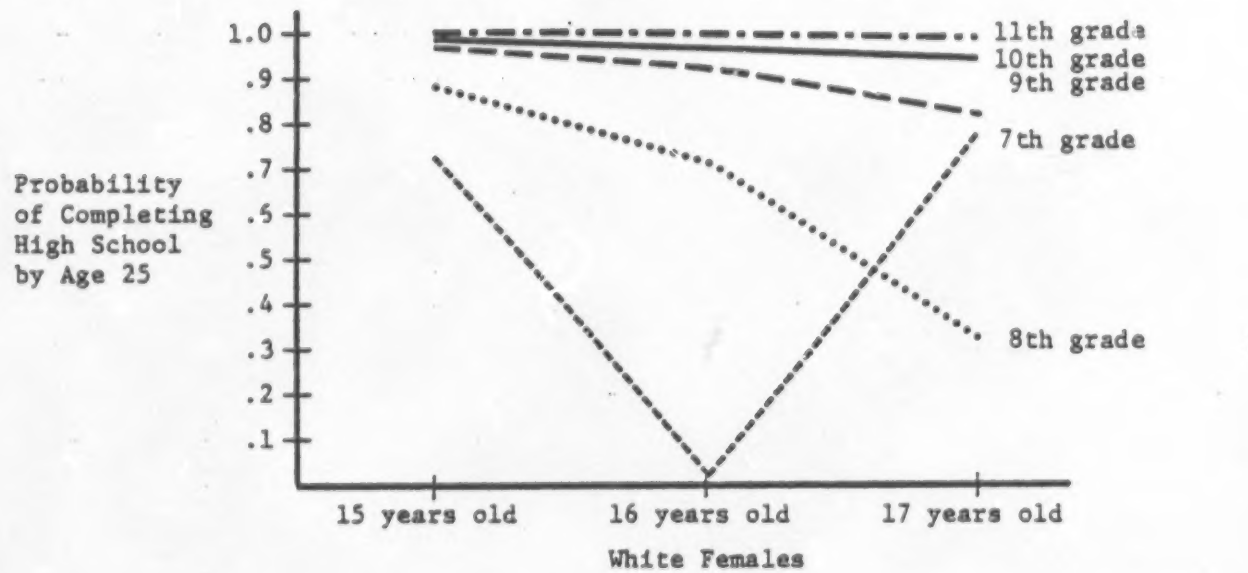
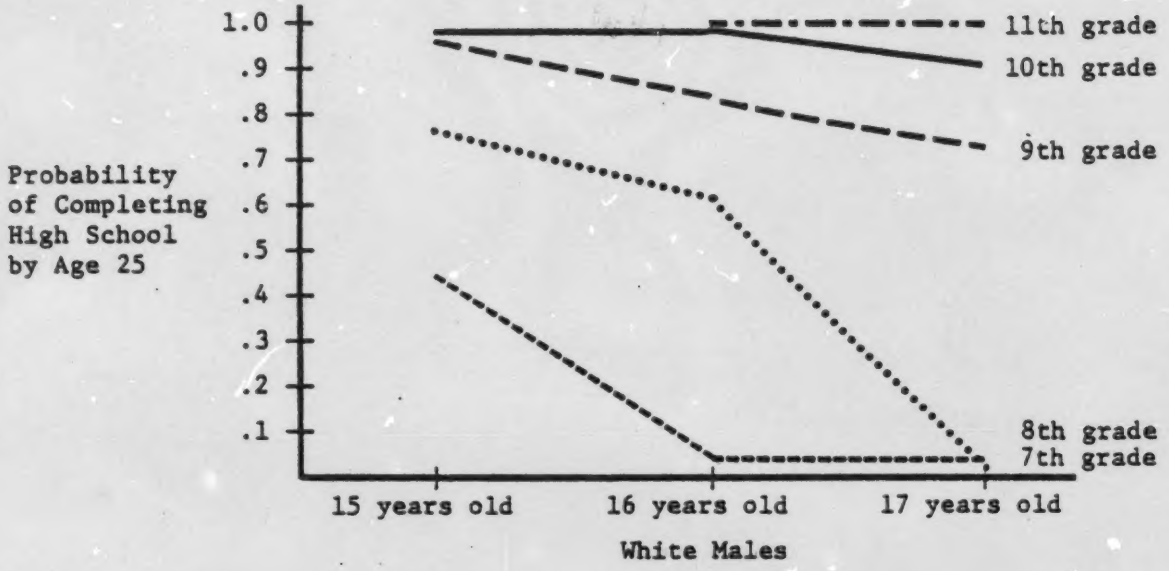


Figure 1. Probability of completing high school by age 25 for 15, 16, and 17 year olds who are enrolled and who have completed certain grade levels (1974-75).



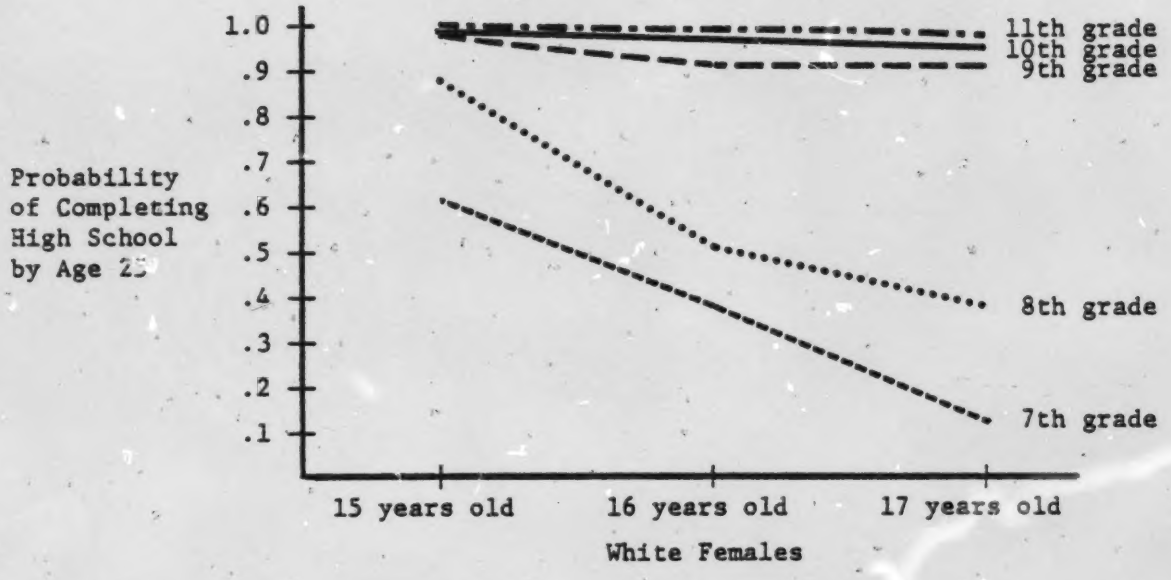


Figure 2. Probability of completing high school by age 25 for 15, 16, and 17 year olds who are enrolled and who have completed certain grade levels (1977-78).

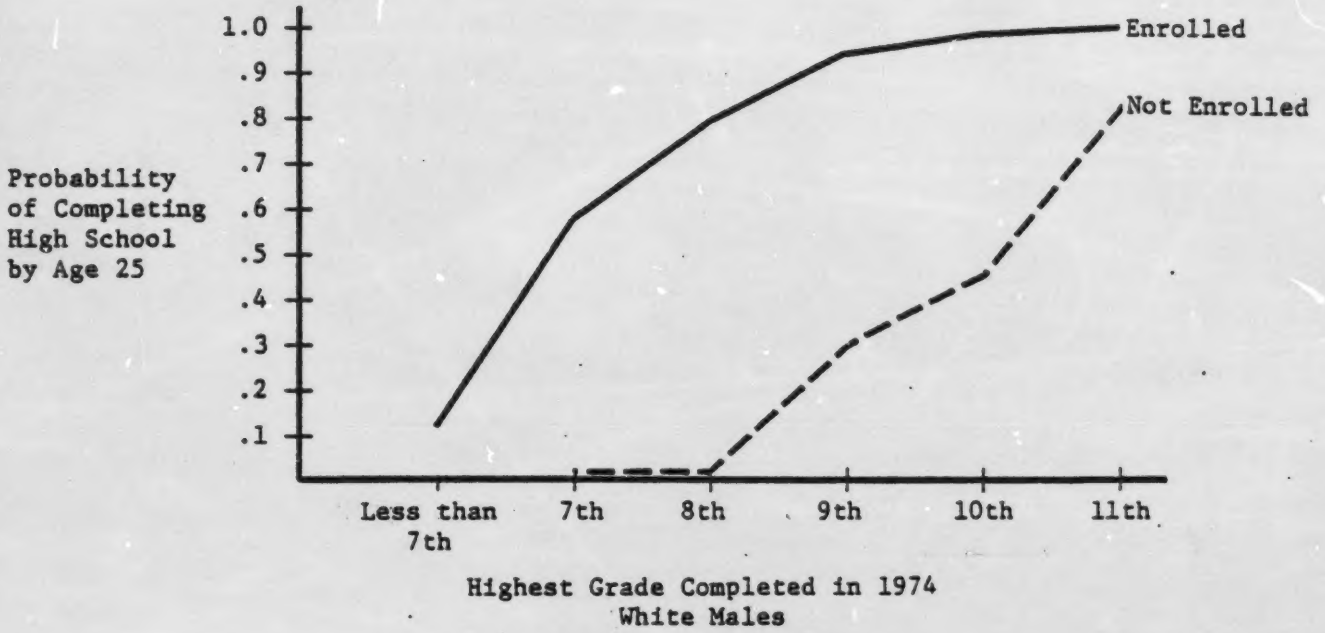
The two figures reveal some interesting results. First, the probability of completing high school is very high for both males and females who have completed at least the 10th grade by age 15, 16, or 17 years. This is also true for females who have completed the 9th grade; but among males, the probabilty decreases for those who, by age 16 or 17, have only completed the 9th grade (i.e., are below modal grade). The probability of completing high school decreases drastically for those students who are further behind their peers (i.e., 7th grade for 15-year olds, and the 7th and 8th grade for 16- and 17-year olds). The one anomoly to this fairly regular pattern is the high probability of high school completion for 17-year-old white females in the 7th grade (.790); this one point results from so few individuals that it is relatively unstable. Finally, we find negligible differences in the patterns between the two pairs of years--for 1974-75 and for 1977-78.

Figures 3 and 4 provide the data on high school completion displayed in a slightly different fashion. In these figures, the data are averaged over the three age groups to reveal the differences in rates of high school completion between those who are enrolled and those who are not enrolled. The data show a high probability of high school completion by age 25 for those who finish the 11th grade, whether or not they are enrolled the next year. As might be expected, those who are not currently enrolled in school have a lower probability of completing high school, and the probability of their completing high school decreases the earlier that they leave the school system.

These results imply that special emphasis should be placed on encouraging students to complete at least the 9th grade. Such encouragement is particularly important for older students who are below modal grade. If the student can get through the 9th grade, he or she is quite likely to complete high school. Therefore, federal initiatives, such as the National Youth Service Program, for example, should include an educational component that encourages persons to obtain additional high school education, at least through the 10th grade.

College Completion

In recent decades, a high school education has become nearly universal. At the same time, increasing demand has been expressed for a college education. In reporting on the ratio of college degrees to high school



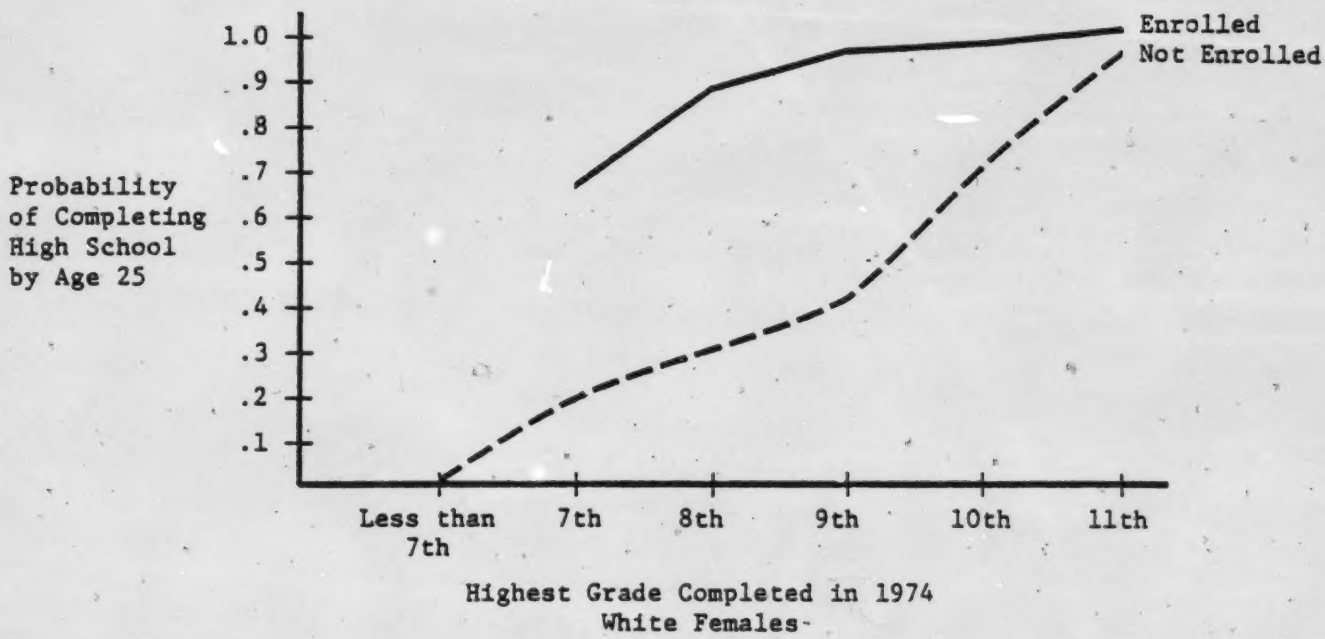
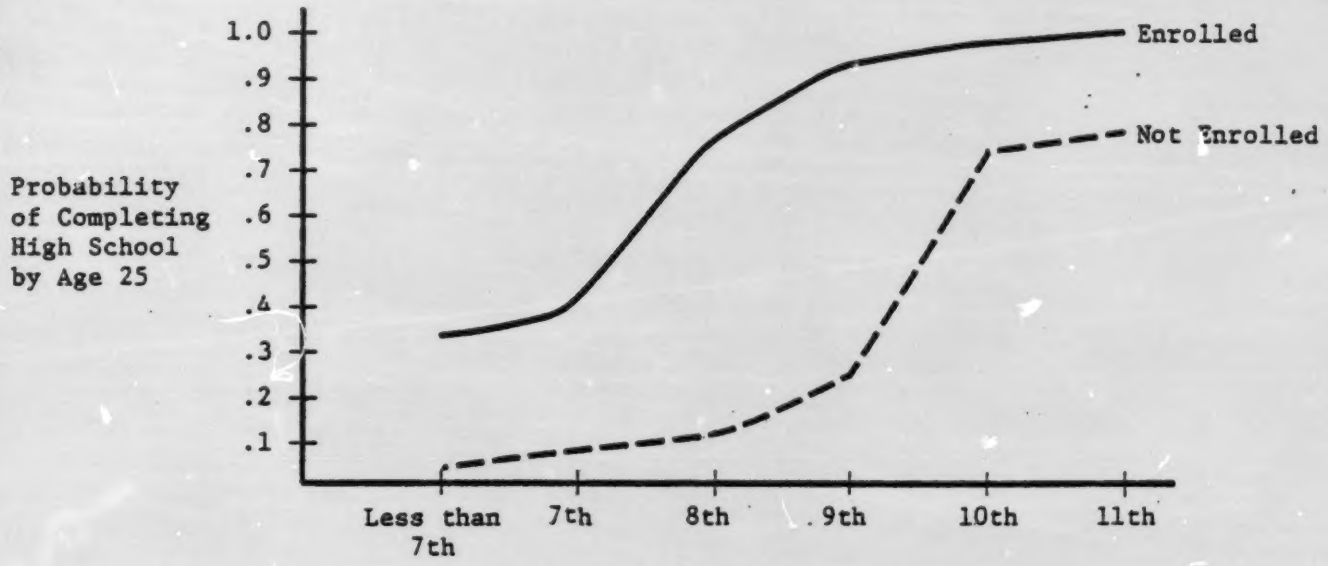


Figure 3. Probability of completing high school among students aged 15, 16, and 17 who are enrolled or not enrolled.



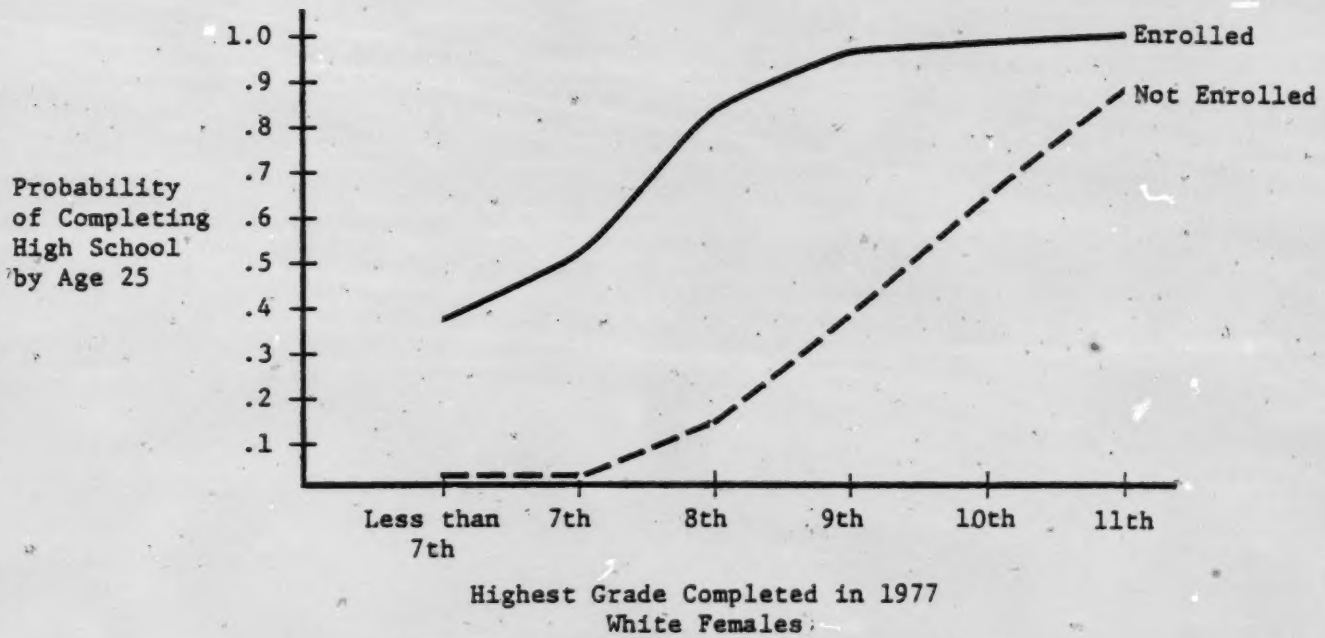


Figure 4. Probability of completing high school among students aged 15, 16, and 17 who are enrolled or not enrolled.

graduates, Ferriss (1969, 1978) demonstrated changes reflecting fundamental shifts in the purpose, function, and clientele of the two educational systems. In the late 19th century, the ratio was very high; it was a time when very few completed high school and those who did so also went to college. The ratio dropped in the 20th century, as more and more American youth completed their high school education. Since the late 1950s, the ratio has been near .3. As youth today, particularly men, find college attendance and completion less compelling, further decreases in this indicator may be expected.

Table 5 presents the probabilities of completing college by age 25 for white males and females aged 3 to 24. The data are based on the years 1975-74 and 1977-78. It should be noted that the probabilities were derived by collapsing over the levels of education completed for each age.

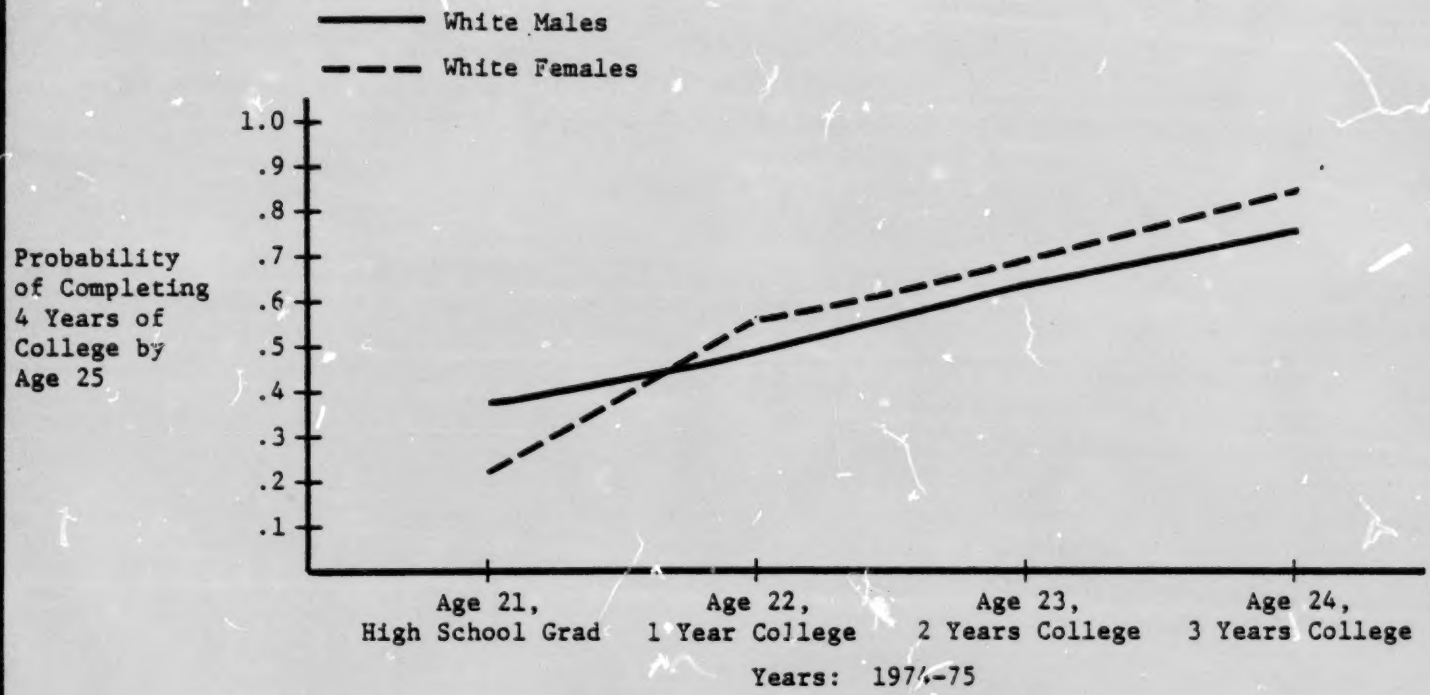
These data reveal several interesting trends. For both men and women, the probability of completing college remains fairly constant until age 21 when it begins to decline. Such results may be considered an artifact of the age groups being studied; that is, most persons in the younger age groups remain enrolled in school and advance one grade level from one year to the next. It is only among the older age groups, beginning with those aged 17 or 18, that significant numbers of persons leave school. The probability of completing college for men and women aged 3 to 20 ranges from .272 to .365, using the 1974-75 data. This result is comparable to Ferriss's (1969) ratio (.300) of college degrees to high school graduates. In contrast, this same figure for 1977-78 ranges from .250 to .302. Thus, there appears to be a slight decrease in recent years in college completion rates. In 1974-75, the expected probability of completing college was slightly lower for men than for women from ages 3 to 19 years, whereas it was slightly higher for men from ages 20 to 24. This pattern changed in 1977-78, and although the differences are extremely small, there is a higher probability of completing college for the men than for the women.

Figure 5 presents data on college completion for specific age groups that have completed certain levels of education. For white males who, at 21 years of age, are at least high school graduates, the probability of completing four years of college by age 25 is .392. As expected, there is an increasing probability of college completion as each year of college is completed. Congruent with the previous results on the older groups in

Table 5

Probability of Completing Four Years of College by Age 25
for White Males and Females

	1974-75				1977-78			
	Males		Females		Males		Females	
Age	p	$\sigma_{\bar{x}}$	p	$\sigma_{\bar{x}}$	p	$\sigma_{\bar{x}}$	p	$\sigma_{\bar{x}}$
3	.303	.006	.355	.004	.256	.004	.251	.048
4	.302	.006	.356	.004	.257	.004	.252	.050
5	.303	.006	.355	.003	.258	.004	.251	.049
6	.304	.007	.356	.002	.263	.003	.252	.050
7	.303	.007	.352	.006	.265	.002	.253	.052
8	.302	.008	.353	.003	.266	.004	.254	.055
9	.300	.003	.353	.001	.262	.000	.251	.052
10	.302	.000	.352	.008	.259	.002	.253	.057
11	.299	.002	.353	.009	.264	.002	.253	.057
12	.299	.003	.343	.000	.272	.000	.254	.056
13	.297	.002	.343	.007	.270	.003	.254	.061
14	.292	.006	.342	.004	.274	.005	.250	.055
15	.297	.003	.357	.000	.267	.000	.253	.060
16	.298	.001	.358	.009	.287	.008	.261	.059
17	.321	.001	.365	.012	.276	.006	.264	.049
18	.310	.016	.355	.017	.302	.005	.275	.019
19	.317	.057	.334	.005	.269	.028	.272	.043
20	.273	.002	.272	.033	.295	.011	.233	.012
21	.351	.002	.215	.018	.256	.020	.208	.025
22	.238	.020	.182	.025	.187	.004	.151	.030
23	.239	.032	.191	.004	.208	.026	.136	.023
24	.205	.038	.169	.026	.174	.015	.198	.003



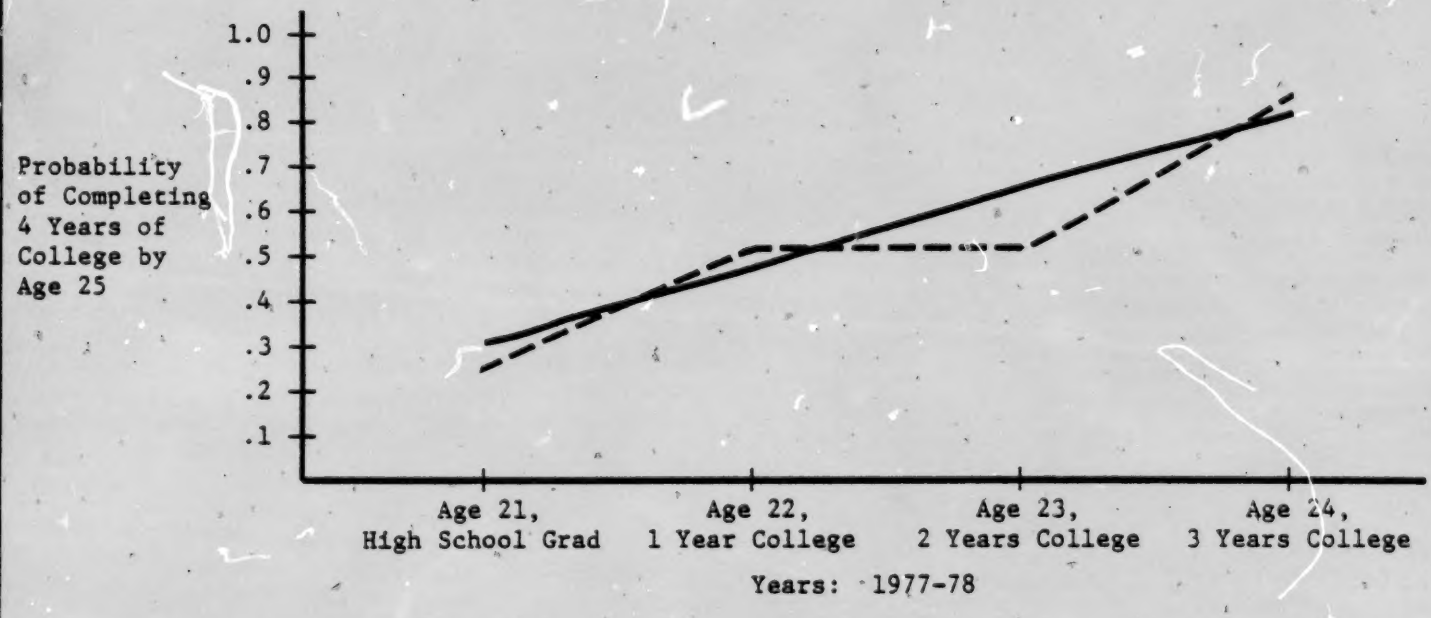


Figure 5. Probability of completing four years of college by age 25 given a certain age and at least a certain level of education by that age.

1974-75, there was a higher probability for men than for women of completing college, among those who, by age 21, were high school graduates; however, among those with some college experience, women were more likely than man to complete four years of college. These differences disappeared in 1977-78.

One might assume that these results reflect increased equity in recent years in educational opportunities for men and women. That may be the case, or it may be that fewer white males are choosing to enter and to complete college. Indeed, we found a drop in the probability of college completion from .392 to .299 for white male high school graduates aged 21 years. At the same time, we see almost equal probabilities in 1977-78 of college completion among women who are 22 and have completed one year of college and those who are 23 and have completed two years of college. This may reflect increasing enrollment in two-year colleges among women. If so, those concerned about educational equity for women may want to create or strengthen programs to encourage women attending two-year colleges to consider continuing their education at four-year institutions.

References

Abeles, R. P., Steel, L., & Wise, L. Patterns and implications of life course organization: Studies of Project TALENT. In P. B. Baltes & O. G. Brim, Jr. (Eds.), Life-span development and behavior, Vol 3 New York: Academic Press, in press.

Borus, M. E., Crowley, J. E., Rumberger, R. W., Santos, R., & Shapiro, D. Pathways to the future: A longitudinal study of young Americans. Preliminary report: Youth and the labor market. Columbus, Ohio: Ohio State University, Center for Human Resource Research, January 1980.

Chadima, S., & Wabnick, R. Inequalities in the educational experiences of black and white Americans. Washington, D. C.: Congressional Budget Office, 1977.

Duncan, B. Trends in output and distribution of schooling. In E. B. Sheldon and M. E. Moore (Eds.), Indicators of social change. New York: Russell Sage Foundation, 1968.

Ferriss, A. L. Indicators of trends in American education. New York: Russell Sage Foundation. 1969.

Ferriss, A. L. Trends in education and training. The Annals, 1978, 435, 157-78.

Gilmartin, K. J. The status of women and minorities in education: A social indicator feasibility study. (SAGE Technical Report). Palo Alto, Calif: American Institutes for Research, 1980.

McMillen, M. M., & Land, K. C. Methodological considerations in the demographic approach to social accounting. Urbana, Ill.: University of Illinois, 1979.

Peng, S. S. Trends in the entry to higher education: 1961-1972. Educational Researcher, 1977, 6, 15-19.

Rossi, R. J., & Gilmartin, K. J. Models and forecasts of federal spending for elementary and secondary education: World War II to the present (SAGE Technical Report #14). Palo Alto, Calif.: American Institutes for Research, 1980.

Stone, R. Demographic accounting and model-building. Paris: Organisation for Economic Cooperation and Development, 1971.

Tipps, H. & Zimbler, L. Social indicators of equality for minorities and women. Washington, D. C.: United States Commission on Civil Rights, 1978.

Wise, L.L., McLaughlin, D.H., & Gilmartin, K.J. The American citizen: 11 years after high school (Volume II). Palo Alto, Calif.: American Institutes for Research, 1977.